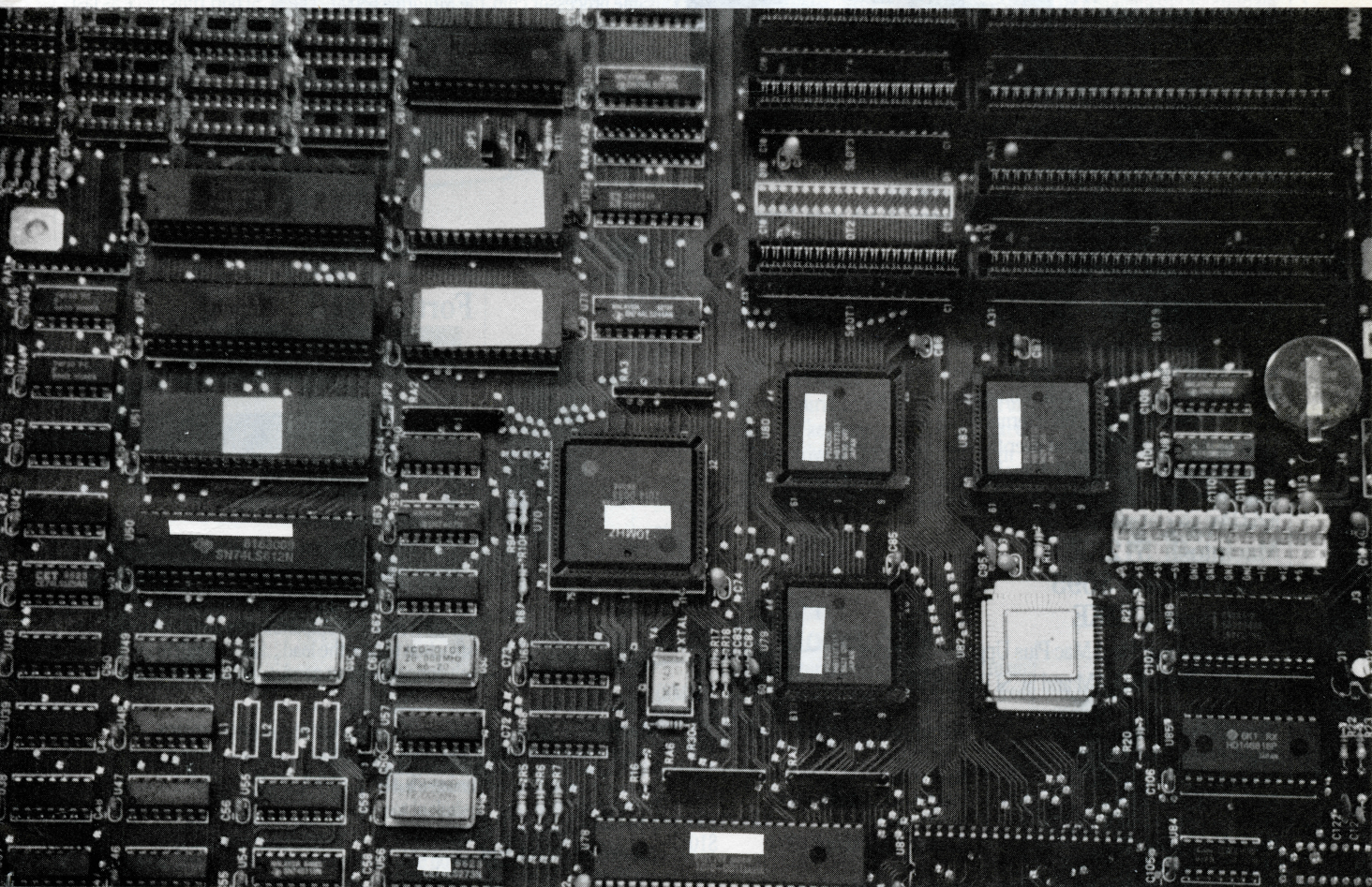


# USED COMPUTER LOCATOR™

**The National Guide to Used Computers and Surplus Electronics**

Feature Articles:    *Review of Versa-Link ATX-300*    See Table  
                              *What are you giving away?*    of Contents



**CONNECTING BUYERS AND SELLERS  
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**April 1990**





# The Nation's Largest Used Computer Dealer

## Lisa 20 Mb System

Sun Remarketing technicians increased the storage capacity and added MacWorks Plus software to the already powerful Lisa. The system comes with one megabyte of RAM, 800K internal floppy drive, internal 20 megabyte hard disk and 12 inch screen. MacWorks Plus allows you to run the same Macintosh software that others run on Mac Pluses at Lisa's economical price.

The large 12 inch screen gives you more visible work area, not just a jumbo view. For desktop publishing this is a real benefit. An optional SCSI card allows you to attach hard drives, scanners, etc.

**System Includes-** one Mb RAM, 800K floppy, 20 Mb Hard Drive, Screen Modification Kit Item # 100-011



**Complete  
\$1095**

## Macintosh // Call for Price and Configuration

Offers Maximum expandability in a Macintosh. Six built-in ports include two Apple Desktop Bus, one SCSI and one sound port. Advanced graphics are capable on a wide range of monochrome and color monitors. Excellent choice for Desktop Publishers.

## Macintosh SE \$2170

Maximum performance in a compact footprint fit's neatly on your desk, easy setup, and transportability. Redesigned over earlier Macs. Changes let the SE run 30 percent faster than a Mac Plus even though it uses the same processor chip, the Motorola 68000. The SCSI port runs twice as fast and the video circuitry is redesigned for speed. A first for a Macintosh is a built-in fan. (Price includes a new Data Desk 101 Keyboard).

## Macintosh Plus \$1095

Enjoy the comforts of the Mac lifestyle without laying out a lot of cash. Comes complete with one 800K internal disk drive, one megabyte RAM, 128K ROM, SCSI port, and keyboard.

## Call For Price and Availability on other Systems

## Macintosh 512KE

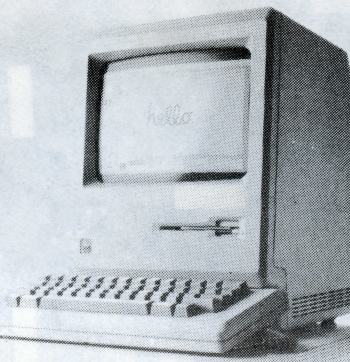
The Macintosh 512KE offers an inexpensive way to enjoy the comforts of the Macintosh lifestyle without laying out a lot of cash. Comes standard with 512K RAM and a single 800K internal floppy drive. 128K ROM (an enhancement over the Mac 512) allows this computer to handle HFS, Hierarchical Filing System, a hard disk management system with the simplicity of Mac user interface.

## Macintosh 512KE

with Keyboard \$695

## Macintosh 512KE

with Keyboard and Mac Plus Upgrade (includes 512K additional RAM and SCSI Port \$990



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| PhoneNet Style DB9               | \$39 |
| PhoneNet Style Mini-DIN 8        | \$39 |
| AppleTalk Custom Wire Kit        | \$79 |
| 100 meters cable and connectors. |      |
| AppleTalk Extension              | \$15 |
| 10 meter extension.              |      |
| IBM AppleTalk Option             | \$79 |
| SCSI System Cable                | \$24 |
| SCSI Expansion Cable             | \$24 |
| SCSI Terminator                  | \$24 |

### Macintosh Software (older versions)

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|--------------------------|-------|
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| HyperCard                | \$39  |
| Insight Accounting (new) | \$399 |
| MacProject               | \$59  |
| Electric Checkbook       | \$10  |

### Macintosh Hardware

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| Apple SCSI 20                              | \$395 |
| A 20 Megabyte external hard drive for Mac. |       |
| 800K Floppy Drive                          | \$195 |
| 400K Floppy Drive                          | \$49  |
| 1200 Baud Modem                            | \$99  |
| 2400 Baud Modem                            | \$139 |
| Cable and Software Included with Modems    |       |

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MacWrite 2.0/MacPaint 1.3 are earlier versions of the popular Macintosh word processing and paint programs.

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## IBM XT 5160



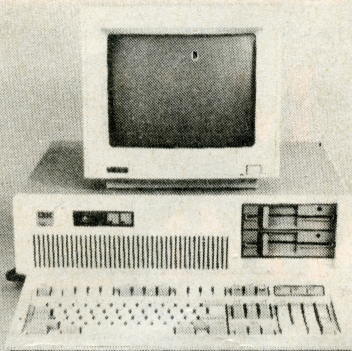
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Price-conscious buyers can own an original IBM computer for less than a clone. The IBM XT 5160 model 86 comes completely refurbished, ready to help you get the job done. Standard features of the Model 86 include the system unit that utilizes the 8088 microprocessor, an 83-key keyboard, 256K random access memory, diskette drive adapter, one 5.25" double-sided disk drive, fixed disk drive adapter, one 10-megabyte hard disk, and an asynchronous communications adapter. Extra memory, printers, game controls, etc. are simple to add by installing the appropriate card. Price includes a monochrome monitor.  
Item # 140-001, 141-011, 141-017

## Memory Upgrade to 640K \$150

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## IBM AT 5170



cooling fan. The eight system expansion slots make add-ons a snap. Measures 6.38" high, 21.25" wide and 17.28" deep. Includes monochrome monitor. (For DOS see page 2)

## IBM AT Model 99

This configuration includes a system unit (6MHz), an 84-key keyboard, 512K RAM, fixed disk and diskette drive adapter, one 5.25" high capacity disk drive, one 20Mb hard disk and one serial/parallel adapter. 42 lb. Save \$400 over previous prices.

Item # 140-003

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\$1095**

## IBM AT Model 339

This configuration includes a system unit (8MHz), an 101-key keyboard, 512K RAM, fixed disk and diskette drive adapter, one 5.25" high capacity disk drive, one 30Mb hard disk and one serial/parallel adapter. 43 lb. Save \$400 over previous prices.

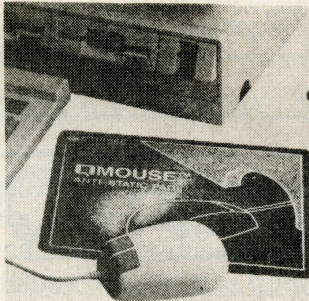
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This is the standard by which all others are judged. These IBM AT originals feature the Intel 80286 (see clock speeds below), sixteen interrupt levels, direct memory access, 64Kb ROM (manuals and MS-DOS not included), realtime clock in CMOS, BASIC-80 interpreter version 3 in ROM, automatic power-on self-test and 192-watt switchable power supply with

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## XT Multi I/O Card \$49

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## MS-DOS 4.01 \$99

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## Articles Sought:

The Used Computer Locator welcomes articles, letters, tutorials, product reviews, comments and suggestions. Please address letters, manuscripts, press releases to:

**Used Computer Locator**  
2314 Iowa Avenue  
Cincinnati, Ohio 45206  
Attn: Ken Wilkinson

## Staff

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Lou Oldendick, **Photographer**

## A Message From The Editor:

Many of you have told me that a used computer is a **NEW** computer to the buyer, so this month we are adding new advertisers which deal in accessories, peripherals, and software. Also this month we have doubled our mailing list. We now reach over 30,000 people with the Used Computer Locator.

Computer Clubs please note! Your members can reach a national audience to sell your extra equipment. Our classified ads are getting results. I have received letters requesting that we have more ads for Apple II equipment. Do you have any Apple II computers or accessories to sell? Placing a classified ad will not only reach other users, but schools who buy and need spares too.

For this issue we are reprinting two articles which we thought of interest. One a review of the Versa-Link call processor. This will help those folks with a limited quantity of phone lines, and need to use FAX machines, modems, etc. The other is a reprint from the Phoenix PC User Group News. This article informs us that we can give away valuable proprietary information when we sell our computer. While the main subject of the article is the IBM PC style of computers, I'm curious if the idea behind the article is applicable to other computers... anyone?

These articles represent what kind of service we would like to provide. Articles which would be useful for users of computers. If you know of others or have an interest in being a published author I would like very much to hear from you.

If you are aware of show and conferences please drop us a line telling us.

Librarians, please make your copy of the "UCL" available to your readers.

And drop us a line if you are aware of new sources of buyers and sellers of computer equipment. We are interested in identifying computer users who are continuously upgrading and exchanging equipment.

**Contest!** I will offer a free classified ad (up to one column inch) to the first five respondents that tell me what the front cover is of, and what is wrong with the with it!

Finally, I hope you enjoy the humor. April Fools! **-Ken**

Suggestions on buying and selling used and surplus equipment. A principle concern of buyers of used or surplus equipment in other parts of the country, is purchasing an item of unknown condition. To safeguard this condition, we suggest that the item be depot inspected at the many service centers that specialize in the repair and service of computers and electronics. A service contract would also be something to consider. There are numerous service organizations networked nationally, allowing i.e., someone in New York to sell, check-out, and ship a computer to a buyer in Los Angeles.

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## BUYERS MARKET

AT&T 7300 UNIX-pc. Loaded system: 2.5 meg RAM, 67 Meg HD, graphics similar in resolution to a Hercules card, windowing, mouse, built-in 1200 baud modem, 2 extra serial ports (3 total). Software includes: complete development system, Smart Software (word processor, spreadsheet, database, etc), Electronic Mail (front end for uucp mail), GNU C compiler, GNU Emacs, MicroEmacs, tons of PD stuff. Includes complete set of manuals, including programmers man pages. \*Added bonus\*: hard to find Technical Reference Manual \*and\* Student Training Manual. Asking: \$1400 - I am not interested in selling the Development Set or manuals alone yet. I may soon piece out the combo card, however. call (408) 578-9145 [home] or (408) 366-4117 [work].

AT&T UNIX PC for sale. Configuration: 2 megs RAM, 67 meg Hard Drive, 5 1/4" Disk Drive, Mouse, 1200 baud modem, Serial Port, Parallel Port, Software: Unix 3.51m, Development Set, Document Preparation Set, Enhanced Editors, VDI and Xt/Layers, gcc 1.37.1,

Fortran 77, Modula-2, small 3.1, HDB uucp, Tons of PD stuff, Tons of stuff from The Store! Full Manual Set + "Exploring The UNIX System" by Stephen G. Kochan and Patrick H. Wood (A beginners guide to UNIX) Price \$1500 or best offer. Also for sale a slightly used Epson FX-86e printer (240 cps printer/40 cps near letter quality) \$200 or best offer. Willing to discuss configuring system to specific needs. phone (906) 482-0320. Dave Hale

23 Mbyte tape backup for the Unix-Pc. Includes tape drive, controller, cables, and software. Asking: \$500 Robert Netzer Phone: 608-262-0018 (8am-5pm), 608-271-8460 (5pm-8am)

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I regret to announce that I am parting with my beloved 1040st. 1040STf with internal 3.5" drive, 1meg RAM, Atari SC1224 color monitor (640x200 4-color or 320x200 16 color graphics) Software: Megamax C compiler, Forth 68000 macroassembler, 3 (count them, three :) different versions of BASIC (one interpreter and two different interactive compilers), First Word word processor, Spectrum 512 paint program Manuals included for all languages. Asking price: \$950 (Canadian) or best offer. Rob Hutten Ph. (902) 542-1686

ATARI 130XE system for sale. System includes the following: Hardware: Atari 130XE, Magnavox Color 40 Monitor, Two (2) XF551 Disk Drives, and P:R: Connection (std serial & parallel ports) with cables. ALL HARDWARE IN "LIKE NEW" CONDITION! Software: DOSXE, DOS 2.5, Paperclip XE (word processor), Newsroom (basic desktop publisher), Speedcalc (spreadsheet), disk-based games (commercial & PD), and several PD programs (including a word processor, (2) communication (terminal) programs, a database program, etc.) Misc.:

Two disk caddies, 40+ (DSDD) disks, dust covers (computer, monitor and one disk drive), several books and magazines. Sell above for \$550 plus shipping or I will sell the system \*without\* monitor for \$350 plus shipping. Items not for sale separately. Contact: Roy C. Gosewehr 6205 Oregon Court Plano, TX 75023 (214) 517-4981 (evenings/weekends) GENIE: R.C.Gosewehr

ATARI 1040ST with Color and Monochrome monitors. \$best offer Call Dorian at (518) 276-7272.

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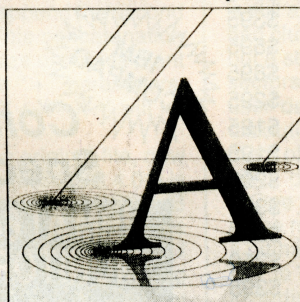
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# WHAT ARE YOU GIVING AWAY?

by: Grey Staples, CDP, CCP, Information Repair Service, Inc., Scottsdale, Arizona

(Article originally appeared in the Phoenix PC User Group newsletter, February, 1990)

Consider the following: "A trade journal recently reported that a used computer buyer was able to recover "erased" data from the computer's fixed disk, including company memos and automated design files." That quote appeared in PS/2: Perspectives, an IBM publication for consultants. The article covered the topics of what you could be giving away on a computer, and how to destroy any sensitive data. The cause of this problem is the fact that the DOS FORMAT and DELETE commands (for most computers) do not overwrite the sectors on a fixed disk, they only reset the pointers to the files and free their space on the disk. With all the "unerase" and "unformat" utilities on the market, that data can be revealed.

The article discussed the set of options available when selling your computer or returning a rented one. These range from physically destroying the disk (the sledge hammer approach to computer security), performing a "low-level" format of the disk surface, or using one of the newer versions of the popular disk utilities to clear the disk. Norton has had "Wipedisk" available for years. The PC Tools Compress program has a "clear" option to overwrite all freed sectors, and the 1990 version of the Mace Utilities has a Destroy program. It should be apparent what that one does. The extra software can be purchased to obliterate all that sensitive data.

But the challenge is there to accomplish the same end without spending any money. Can DOS commands be used to overwrite every free sector on the fixed disk? One cheap and partially effective method is to use the COPY command to replicate a "throwaway" file, over and over again. Let's select COMMAND.COM, since every PC has one in the root directory (unless you use SET to respecify COMSPEC). My technique is as follows. First copy COMMAND.COM to another file named X. I chose this name because I am inherently lazy and would rather type one character than eleven when naming the file. The command would appear as: COPY COMMAND.COM X. Now we have the "throw away file".

Now we get down to some serious replicating. The concatenation form of the COPY command (X + Y) will allow us to quickly multiply the size of our X file. The command is: COPY /B X + X + X + X Y. The "/B" is necessary since the default parameter is "/A" when using the "+" or concatenation operator. With a simple COPY, binary (/B) is the default, while with a concatenation, ASCII (/A) is the default. The binary option tells DOS to copy the file up to the number of bytes shown in the directory. The ASCII (or text) option allow DOS to copy only up to the first "end of data" character (26 in decimal, or Ctrl Z from the keyboard). The choice makes sense when you consider that most copies from one file to another are dealing with binary files, like those with COM, or EXE extensions, while most uses of the "+" concatenation operation are probably for ASCII, textfiles. One would not normally need to combine two binary files, since the result would not be understandable by most software.

The sequence "X + X + ..." tells DOS to append the second copy of X right after the end of the first. This concatenation is repeated enough times to quadruple the size of the resultant file. To speed up the process, use more of the "+" parameters. For example, COPY /B X + X + X + X + X + X + X + X Y will increase the original file eight fold.

We now have a new, larger, version of the original file, now named "Y". What had been a 37K byte file (MS-DOS 4.01) is now over 150K bytes. Next we enter the command COPY /B Y + Y + Y + Y X. The original COMMAND.COM now overlays 600K bytes, and is named X. Do it again, copying X to Y, will take up 2.4 megabytes of fixed disk. Once more and 9.6 meg are gone. Keep this up until you get the message "Insufficient disk space." Depending on the version of DOS, the last sector of the last cluster on the fixed disk has been overlaid. You would need a disk utility, I implied earlier was not needed, to verify that the last byte of disk space had been Overlaid. At this point the X and Y files can be deleted, freeing all that over-written disk space. Job completed!

You could use a BAT file to make the process even easier.

Create a batch file named CLOB.BAT (as in clobber) and have it contain the one line command of: COPY /B %1 + %1 + %1 + %1 %2. When entering CLOB X Y, the %1 would take on the value of the first argument (X), and the %2 would be the second (Y). So now our procedure would be to issue the command CLOB X Y, followed by CLOB Y X. By reversing the X and Y names we switch back and forth between the two files used in the COPY. Each time we use CLOB we quadruple the size of the target file.

But, we are still missing something. DOS manages space on a fixed disk by grouping the 512 byte physical sectors into "logical" units called allocation units, or clusters. Typically they are 2048, 4096, or 8192 bytes in size. Since the file being used to overwrite all the free clusters on the disk is probably not an even multiple of the cluster size, there is a small residual or "slack" area at the end of the file which is not cleared. DOS will use as many 512 byte sectors as needed to receive the file. Any excess up to the size of the actual allocation unit (cluster) will be untouched, retaining the previous, and possibly sensitive, data. A few scraps of data could be gleaned from the slack areas.

So, let us make a file which is one cluster in size and use it in the CLOB procedure just defined. This file will contain exactly 2048 bytes of zeroes. At the DOS prompt enter the following:

|              |                                                                                                                                                                            |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DEBUG        | Invoke the DOS utility program.                                                                                                                                            |
| F 100 900 00 | Starting at location 100 in memory, place a hex value of 00. Continue this for 801 (2049 decimal) locations. Addresses 100 to 900 are now cleared.                         |
| RCX          | Ask DEBUG to display the CX register.                                                                                                                                      |
| (CX 0000)    | The current contents are zero                                                                                                                                              |
| 800          | The new value of CX is set to 800 (hex).                                                                                                                                   |
| NX           | Name our new file "X".                                                                                                                                                     |
| W            | Write the file with 2048 bytes of 00. By DEBUG convention the Write starts at location 100 and sends the number of bytes specified by the CX register to our file named X. |
| Q            | Quit back to DOS                                                                                                                                                           |

This new file will exactly fit a cluster on the fixed disk and will have NO exposed slack area. If the cluster size on your computer is larger than 2048, then change the value of 900 in the second step: if 4096, use 1100; if 8192, use 2100, etc. Similarly change the value put in the CX register to 1000 or 2000.

This is about as cheap a method I can find to quickly overwrite ALL the free clusters and sectors on a fixed disk. But there is still another possible exposure. Consider that if there are any bad clusters marked on the disk, DOS will not reference them, but a sector editor utility (Norton, Mace, etc) might. Usually the sectors were damaged during manufacturing, and contain no user data. But, now we have various test, repair and doctor disk utilities to search for new unreadable sectors, and fence them off from DOS. That "bad" cluster may contain some sensitive data.

One typical cause of a damaged sector is a power "glitch" at the moment when a sector is being written. The result is that a bit has been dropped as the sector data was being transferred to the disk. Everything has been shifted over one bit, including the checksum value at the end of the sector. Assuming that the Error Correcting Codes didn't, we now have a sector which will produce an "Error reading drive C" message. I have repaired such errors by reading the sector into the computer, repairing what had to be fixed (a bit shift here or there), and rewriting the sector back to the disk. Voila, there is no more error, and almost all the original data is revealed. Pleasant dreams!!!



# DOS 2.x IS A LITTLE CARELESS

When formatting a 362K byte diskette, the DOS FORMAT utility builds a File Allocation Table (FAT) of two sectors, but only the first twenty-two bytes of the second sector are needed. The rest of the FAT sector is up for grabs. The crux of our problem is that the older versions of DOS (2.x) made no attempt to clear the remaining 490 bytes of the second sector of the FAT. In version 3.x the remainder is zeroed. The problem is that under version 2.x, the FORMAT program copied whatever was in memory out to the diskette. Most folks would not look for this sort of security exposure, but then there is me.

What triggered this focus on minutia, was that I discovered a fragment of the check register I had been updating, just prior to formatting a new diskette. First I did my accounting work, then I formatted the diskette. It was only 490 bytes, but it was MY DATA.

The problem impacts more than just DOS 2.x systems. While DOS 3.x will zero out the "slack" area above the FAT, someone else might make use of it. This is a perfect, hidden, place for a virus to hide.

Here is a simple technique for displaying what might be hidden in the "FAT Slack" bytes on a diskette. I suggest you routinely use this procedure for any incoming diskettes. For DOS 3.x it had better contain only zeroes. At the DOS prompt enter the following:

DEBUG

L100 0 X 1

D

D

Q

Invoke the DOS utility program

Load (read) to memory location 100 from device 0 (drive A:) from sector number X (See table below for value of X) for 1 sector

Dump the first 128 bytes to the screen.

Dump the second 128 bytes.

Quit back to DOS.

By inspecting the Dumped sector we can see just what was left in the computer memory when the diskette was formatted. Most likely the fragment will be a small portion of whatever program was resident in memory prior to the FORMAT. Perhaps it is part of the FAT from the fixed disk if a CHKDSK was issued just prior to the FORMAT. Or perhaps what is revealed is really sensitive, interesting and revealing. Who knows?

Table of FAT slack sectors

| Format                | 360K | 720K | 1.2M | 1.4M |
|-----------------------|------|------|------|------|
| X - Last FAT Sector # | 2    | 3    | 7    | 9    |
| Slack Size            | 490  | 462  | 24   | 334  |

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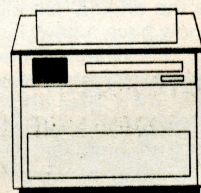
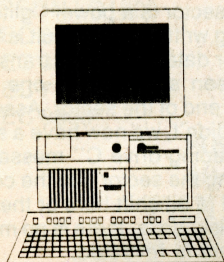
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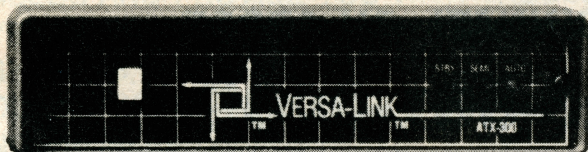


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The many applications include facsimile, PC fax boards, telex, modems, credit card authorization equipment, E-Mail and, of course, telephones. Standard features of the ATX-300 include Auto-Fax detection, tone or pulse transfers and call-Optimizer.

An ATX-300 is also great for that new-age type who has left the city to establish a home-as-office in the hills. But lovers of the simple life, take heart! Installing this at your hearth is no horror show. You just plug it right into a RJ-11 modular jack.

Setting one of these babies up in a business situation behind a key system or a PBX is a somewhat different story. If you are using a multi-line key system, you must attach your KSU telephone input for the selected line to the Device 1 connector on the back of the ATX-300. The ATX is not designed to operate at a station port of a KSU and will only operate on the trunk side. However, the

ATX-300 can work as a station extension of any PBX and can be used on the trunk side of most loop-start PBXs.

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The Versa-Link ATX-300 is reasonably priced at \$395. Consider how much money you'll save by not renting a second and third line. Multi-Link is actively seeking agents and distributors. So after you buy one and fall in love with it, you might want to try selling them. Their number is 606-233-0223.

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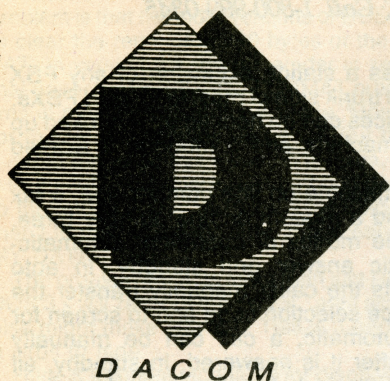
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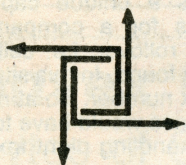




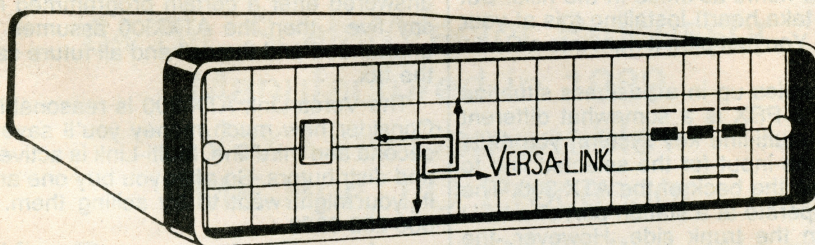
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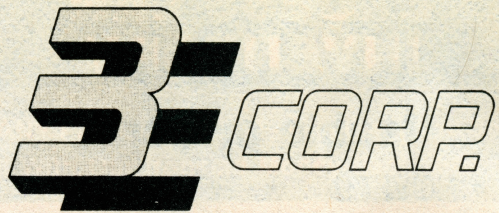
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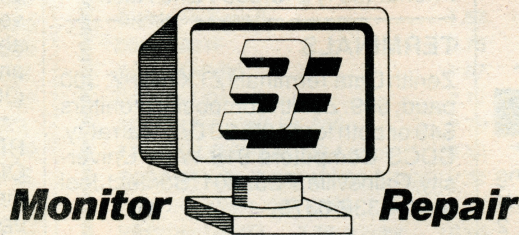
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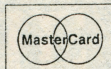
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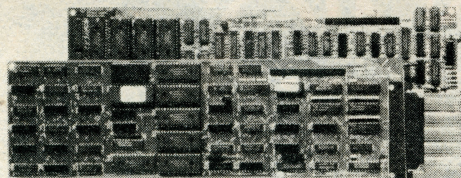


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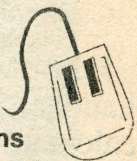
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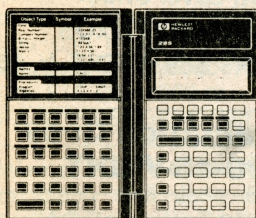
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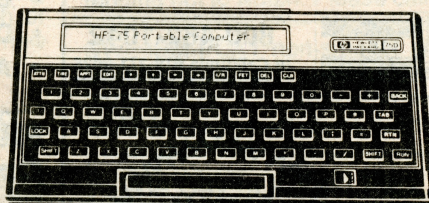
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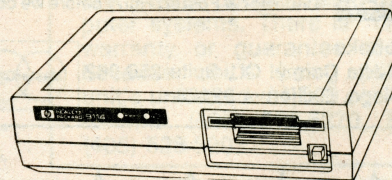
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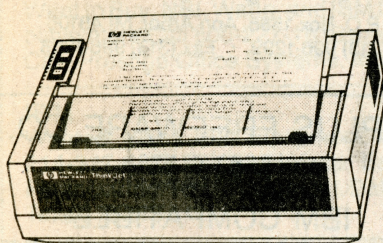
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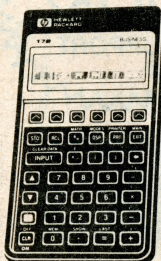
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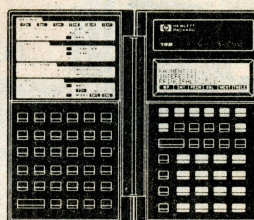
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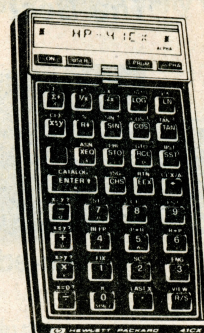
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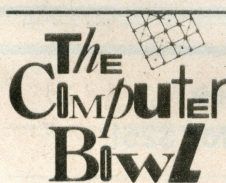
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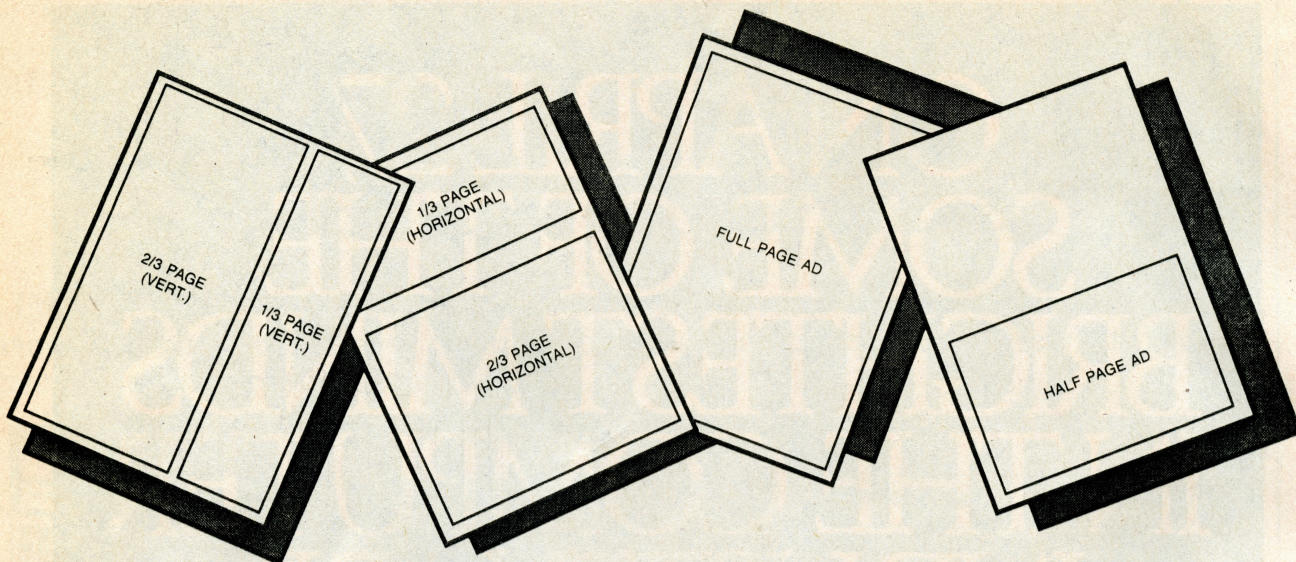
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